

Abstract

A Wide Area Serial PCI system for connecting peripheral devices to a computer. The WASP system includes a host computer system connected through a serial bus to a remote device. The serial bus can range from several meters to several kilometers or more. The host computer system includes a CPU and memory, and also includes a first Peripheral Component Interconnect (PCI) bus, also referred to as the local PCI bus. A primary bridge according to the present invention is coupled to the first PCI bus. The primary bridge includes PCI interface circuitry for interfacing to the first PCI bus. The remote device is located remotely from the computer system and comprises a second or remote PCI bus and one or more peripheral devices coupled to the second PCI bus. The remote device also includes a secondary bridge coupled to the second PCI bus. The secondary bridge includes PCI interface circuitry for interfacing to the second PCI bus. The serial bus is coupled between the primary bridge and the secondary bridge. Each of the primary bridge and secondary bridge include parallel to serial transmitters for converting parallel data generated on the first PCI bus and second PCI bus, respectively, to serial data for transmission on the serial bus and for converting serial data received from the serial bus to parallel data for generation on the first PCI bus and second PCI bus, respectively. The primary bridge and the secondary bridge collectively implement a PCI-PCI bridge register set. The primary bridge and secondary bridge generate a series of packets in response to accepting a PCI bus cycle that is stored in a queue. The first packet in the series of packets is a first command packet that includes predicted byte enables. The predicted byte enables are generated prior to the actual byte enables reaching the head of the queue. If the predicted byte enable values are later determined to differ from the actual byte enables, the first command packet is discarded and a second command packet is generated.

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